

**From:** [Miller, Garyg](#)  
**To:** [Lorber, Matthew](#); [Berg, Marlene](#)  
**Cc:** [Poore, Christine](#)  
**Subject:** RE: Degredation of dioxin  
**Date:** Thursday, March 31, 2016 8:10:00 AM

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Thanks Matt; this is very helpful. FYI, the dioxin at San Jacinto is below an armored cap & geotextile, so sun exposure would not apply. Also, do you have a copy of references? I went to the link and there was a charge to get the paper.

Thanks,

Gary Miller  
Remedial Project Manager  
EPA Region 6 – Superfund Division (6SF-RA)  
214-665-8318  
[miller.garyg@epa.gov](mailto:miller.garyg@epa.gov)

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**From:** Lorber, Matthew  
**Sent:** Thursday, March 31, 2016 8:03 AM  
**To:** Berg, Marlene <[Berg.Marlene@epa.gov](mailto:Berg.Marlene@epa.gov)>  
**Cc:** Miller, Garyg <[Miller.Garyg@epa.gov](mailto:Miller.Garyg@epa.gov)>; Poore, Christine <[Poore.Christine@epa.gov](mailto:Poore.Christine@epa.gov)>  
**Subject:** Re: Degredation of dioxin

Marlene - First, I cannot address the issue of "acceptable levels" in soil. Other than for cleanup of Superfund Sites, and I assume you can help with that Marlene, EPA headquarters does not establish "acceptable" or "safe" (or any other type of benchmark) concentrations of a chemical in soil that I'm aware of; I believe some EPA Regional offices may establish levels for their own use. Regarding degradation of dioxin in soil, that is also not an easy answer. First, there are many dioxin "congeners", or different chemicals related chemically and toxically to the most toxic of the dioxin congeners, 2,3,7,8-tetrachlorodibenzo-p-dioxin, or 2,3,7,8-TCDD, often further shortened as TCDD. In a somewhat older document we published on assessing exposure to dioxin from various sources including soil, we did address the "half-life" of dioxins in soil (the time it takes for an initial concentration of dioxin in soil to degrade or otherwise dissipate to half its concentration). Part of this question is the amount of dioxin residing near the surface soil to degrade by sunlight versus dioxin beneath the soil surface which doesn't have this pathway. I would encourage the Gary to access chapters from Volume 3 of our assessment at this site:

[http://link.springer.com/chapter/10.1007/978-1-4613-3599-3\\_15](http://link.springer.com/chapter/10.1007/978-1-4613-3599-3_15)

He will see that we assigned a half-life for TCDD residues at 25 years within the top 2 cm of soil. References are provided showing a more rapid half-life for dioxins closer to the surface, and maybe in the range of 25-100 years for buried residues. Interestingly, one of the best



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references for TCDD half-life was developed from studies conducted in the 1970s, from this reference:

[http://link.springer.com/chapter/10.1007/978-1-4613-3599-3\\_15](http://link.springer.com/chapter/10.1007/978-1-4613-3599-3_15)

I know this is not a simple answer, but hopefully it is helpful.

Matt

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**From:** Berg, Marlene  
**Sent:** Wednesday, March 30, 2016 3:54 PM  
**To:** Lorber, Matthew  
**Cc:** Miller, Gary; Poore, Christine  
**Subject:** Degredation of dioxin

Hi Matt,  
Would you be able to help with the following or direct us to someone in ORD that could?

I received the following query from Gary Miller, who is the RPM for the San Jacinto River Waste Pits Superfund Site, a major Superfund dioxin site in Texas.

Community members would like to know how long it would take for dioxin in the pits to break down to acceptable levels.

Gary wanted to know about studies discussing the degradation of dioxin, or someone in EPA that he could talk to.

Marlene